

THE CLAIMS

What is claimed is:

5 1. A sternum fixation device for securing parts of a sternum comprising:
a first plate having an upper surface and a sternum-contacting surface, and at
least one hole passing through the upper and sternum-contacting surfaces for receiving a
fastener head, the first plate further including a first longitudinal bore defining an axis
oriented substantially transversely to the at least one hole;

10 a second plate having an upper surface and a sternum-contacting surface, and
an attachment member for fixation to the sternum, the second plate further including a
second longitudinal bore; and

15 a release member for holding the first and second plates together, wherein
the first and second plates are dimensioned to mate with one another such that the first and
second longitudinal bores are aligned to receive the release member, and removal of the
release member from the first and second longitudinal bores allows separation of the parts
of the sternum.

20 2. The sternum fixation device of claim 1, wherein the at least one hole is
threaded to receive a threaded fastener head.

25 3. The sternum fixation device of claim 2, further comprising a bone fastener
having a threaded fastener head and a shaft and defining a longitudinal axis that extends
away from the upper surface toward the sternum-contacting surface, wherein the at least one
hole is angled such that when the threaded fastener head is received in the hole, the
longitudinal axis is angled toward the second plate.

30 4. The sternum fixation device of claim 1, wherein the attachment member is a
through hole passing through the second plate upper and sternum-contacting surfaces.

35 5. The sternum fixation device of claim 4, wherein the through hole is threaded
to receive a threaded fastener head.

6. The sternum fixation device of claim 1, wherein the attachment member is a
hook member for engaging an intercostal space portion of the sternum.

7. The sternum fixation device of claim 1, wherein the attachment member comprises at least two hook members spaced apart by a distance, wherein the distance between the hook members is adjustable.

5 8. The sternum fixation device of claim 1, wherein the first and second plates mate with one another such that they cannot rotate with respect to one another about the release member.

9. The sternum fixation device of claim 1, wherein the release member is a pin
10 having a tip portion with a plurality of splayed apart fingers.

10. The sternum fixation device of claim 1, wherein the release member is a taper pin.

15 11. The sternum fixation device of claim 1, wherein the release member is a pin defining at least one longitudinal axis and a cross-section substantially transverse to the at least one longitudinal axis, and the cross-section is ovular, circular, polygonal, rectangular, square, or triangular.

20 12. The sternum fixation device of claim 1, wherein:
the release member is a pin;
the first plate further includes at least one additional first longitudinal bore having an axis substantially parallel to the first longitudinal bore axis; and
the second plate further includes at least one additional second longitudinal
25 bore;

wherein when the first and second plates are mated with one another, at least one of the first longitudinal bores is aligned with at least one of the second longitudinal bores to receive the pin.

30 13. The sternum fixation device of claim 12, wherein the release member is a pin having first and second spaced apart legs, and when the first and second plates are mated with one another, one of the first and second longitudinal bores are aligned to receive the first leg and another one of the first and second longitudinal bores are aligned to receive the second leg.

14. The sternum fixation device of claim 1, wherein the release member is a pin that is substantially U-shaped or T-shaped.

15. The sternum fixation device of claim 1, wherein the first and second plates 5 mate at a mating line, and at least one of the first and second longitudinal bores is disposed at an angle with respect to the mating line.

16. A sternum fixation device for securing parts of a sternum comprising:
a first plate having an upper surface and a sternum-contacting surface, and at 10 least one hole passing through the upper and sternum-contacting surfaces for receiving a fastener;
a second plate having at least one hook member for fixation to the sternum;
and
a release member for holding the first and second plates together, wherein 15 the release member is movably associated with at least one of the first and second plates such that it may be moved to allow separation of the two parts of the sternum.

17. The sternum fixation device of claim 16, wherein the first plate further includes at least one first longitudinal bore defining an axis oriented substantially 20 transversely to the at least one through hole, and the second plate further includes at least one second longitudinal bore, and the first and second plates are dimensioned to mate with one another such that the at least one of first and second longitudinal bores are aligned to receive the release member such that removal of the release member from the first and second longitudinal bores allows separation of the two parts of the sternum.

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18. The sternum fixation device of claim 16, wherein the release member comprises a quick-release fastener and a predetermined rotation of the quick-release fastener allows separation of the two parts of the sternum.

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19. The sternum fixation device of claim 16, wherein the release member comprises a cam located on one of the first and second plates that is movable between a locking and a releasing position, and wherein the other plate further includes an aperture for receiving at least a portion of the cam such that when the cam is in the locking position the first and second plates are held together, and when the cam is in the releasing position the 35 first and second plates are allowed to separate.

20. The sternum fixation device of claim 16, further comprising a set of mating ratchet teeth disposed on each of the first and second plates capable of fixing the first and plates together at a predetermined distance from one another.

5 21. The sternum fixation device of claim 16, wherein the second plate further comprises at least two hook members for fixation to the sternum, wherein a distance between the hook members is adjustable.

10 22. The sternum fixation device of claim 16, wherein the first plate further comprises at least one hook member for fixation to the sternum.

15 23. A sternum fixation device for securing parts of a sternum comprising:
a first plate having an upper surface and a sternum-contacting surface, and at least one threaded hole passing through the upper and sternum-contacting surfaces for receiving a threaded fastener head;
a second plate having at least one attachment member for fixation to the sternum; and
20 a release member for holding the first and second plates together, wherein the release member is movably associated with at least one of the first and second plates such that it may be moved to allow separation of the two parts of the sternum.

25 24. The sternum fixation device of claim 19, wherein the release member comprises at least one quick-release fastener and a predetermined rotation of the at least one quick-release fastener allows separation of the two parts of the sternum.

30 25. The sternum fixation device of claim 19, wherein the second plate has an upper surface and a sternum-contacting surface, and the attachment member is a threaded hole passing through the second plate upper and sternum-contacting surfaces for receiving a threaded fastener head.